WHAT IS CLAIMED IS:

1. An optics/controller sub-assembly for automated focus and brightness control in a spatial light modulator projection system, comprising:

a lamp/reflector providing white light along a first light path, said light brought to a focus point at the entrance to a light integrator;

a first relay lens receiving light from said light integrator and sizing said light to the entrance of a second group of relay lenses;

light from said relay lenses continuing along said first light path, striking the surface of a partial folding mirror;

primary light reflecting off said partial folding mirror along a second light path and partial light passing through said partial folding mirror exiting along a third light path;

a third relay lens placed in said second light path, receiving said reflected primary light from said partial folding mirror and resizing said light to match said system's total internal reflective prism;

light passing through said total internal reflective prism to red-green-blue splitting prisms;

spatial light modulators positioned to receive said red-green-blue light, respectively, from said color prisms, said light being modulated and reflected from said respective spatial light modulators into recombining optics, through a projection lens, and on to a display screen;

a third relay lens located in said third light path, receiving said partial light passing trough said partial folding mirror, sizing, and directing said light on to the surface of secondary folding mirror;

a light detector receiving said reflected light from said secondary folding mirror, a micro-controller coupled to the output of said detector;

first, second, and third outputs from said micro-controller coupled to lamp x, y, z focus servomotors, respectively;

a fourth output from said micro-controller coupled to a lamp power supply; and

a fifth output from said micro-controller to enable a maintenance notification function.

2. The optics/controller sub-assembly of Claim 1, wherein said partial folding mirror performs a sampling filter function on light along said first light path, allowing a fraction of less than 1% of said light to pass through said folding mirror.

3. The optics/controller sub-assembly of Claim 2 wherein said light along third light path is focused to form an image, having a fraction of the light of said projected display image, on the surface of said detector.

4. The optics/controller sub-assembly of Claim 3 wherein said fraction of light focused on said detector has the same light distribution as said projected light focused on said display screen.

5. The optics/controller sub-assembly of Claim 3, wherein the brightness of said fraction of light focused on said detector correlates with the overall brightness of said projected light focused on said display screen.

6. The optics/controller sub-assembly of Claim 1, wherein said servomotors adjust the lamp position to maintain optimum real-time light distribution in said projection system.

7. The optics/controller of Claim 1, wherein said lamp power supply is adjusted to maintain maximum brightness level during warm-up of said projection system.

8. The optics/controller of Claim 1, wherein said maintenance notification alerts personnel to service said projection system, replacing said lamp if necessary.

9. A screen/controller sub-assembly for automated focus and brightness control in a spatial light modulator projection, comprising:

a projection display screen having an array of light detectors for measuring the total brightness and light distribution of a projected image;

a micro-controller coupled to the detectors of said sensor array;

x, y, and z axis servomotors coupled to respective outputs from said micro-controller for positioning said projector's lamp;

a brightness control output from said micro-controller coupled to a lamp power supply; and

a maintenance notification output from said micro-controller.

10. The screen/controller sub-assembly of Claim 9, wherein said servomotors are used to maintain optimum real-time light distribution across said display screen in said projection system.

11. The screen/controller sub-assembly of Claim 9, wherein a lamp power supply is adjusted to maintain a uniform brightness level during warm-up of said projection system.

12. The screen/controller sub-assembly of Claim 9, wherein said maintenance notification alerts personnel to service said projection system, replacing said lamp if necessary.

13. An automated lamp focus method for spatial light modulator based projection systems, comprising the steps of:

focusing an image, using a small fraction of the system's projected light, on to a detector located in said system's optics chain;

obtaining sensor data at the input of a micro-controller;

calculating the lamp luminance distribution and determining if said distribution is within specification, and if said distribution is out of specification, providing input signals from

said micro-controller to x, y, and z servomotors to adjust the lamp focus;

if said luminance distribution is within specification or after x, y, z focus adjustments have been made, then determining if luminance brightness level is within specification, if said brightness level is out of specification, adjusting a lamp power supply to bring said brightness level into specification;

if said brightness cannot be adjusted within specification, notifying maintenance personnel to replace said lamp; and

if said luminance level is within specification or after said maintenance service is complete, obtaining new sensor data and repeating procedure.

14. The method of Claim 13, wherein said servomotor adjusts said lamp position to maintain optimum real-time light distribution in said projection system.

15. The method of Claim 13, wherein said lamp power supply is adjusted to maintain a uniform brightness level during warm-up of said projection system.

16. An automated lamp focus method for spatial light modulator based projection systems, comprising the steps of:

reading data from an array of sensors embedded in the surface of a display screen into a micro-controller;

calculating the lamp luminance distribution across said screen and determining if said distribution is within specification, and

if said distribution is out of specification, provide input signals from said micro-controller to x, y, and z servomotors to adjust the lamp focus;

if said luminance distribution is within specification or after x, y, z focus adjustments have been made, then determine if luminance brightness level is within specification;

if said brightness level is out of specification, adjusting a lamp power supply to bring said brightness level into specification;

if said brightness cannot be adjusted within specification, notifying maintenance personnel to replace said lamp; and

if said luminance level is within specification or after said maintenance notification is made, obtaining new sensor data and repeating procedure.

17. The method of Claim 16, wherein said servomotors are used to adjust said lamp position to maintain optimum real-time light distribution in said projection system.

18. The method of Claim 16, wherein said lamp power supply is adjusted to maintain a uniform brightness level during warm-up of said projection system.

19. A spatial light modulator based electronic projection system with automated lamp focus control, comprising:

a light source consisting of a reflector and lamp, emitting light along a first light path;

a first optional turning mirror to direct light from said light source to focus at the input of a light integrator;

a first relay lens and a second optional turning mirror for directing light from the output of said integrator to a second series of relay lenses and on to the surface of a partial turning mirror;

primary light reflected from said partial turning mirror directed along a second light path through a third relay lens and through a total internal reflective prism on to the surface of red-green-blue color splitting prisms, respectively;

three spatial light modulators positioned to receive red-green-blue light, respectively, from said color prisms;

modulated light reflected from said spatial light modulators directed through recombining optics and projected by means of a projection lens, on to a display screen;

secondary light passing through said partial turning mirror directed along a third light path, through a focusing lens and reflecting off a secondary turning mirror on to the surface of a light detector, wherein the output of said light detector is used to control the brightness and light distribution of said light source.

20. The apparatus of Claim 19, further comprising:

a micro-controller coupled to the output of said light detector;

first, second, and third outputs from said lamp focus mechanism driving respective x, y, and z servomotors for precisely positioning said lamp;

a fourth output from said lamp brightness control circuitry driving a lamp power supply for adjusting said lamp's brightness; and

a fifth output of said micro-controller providing a maintenance notification signal.

21. The apparatus of Claim 20, wherein said servomotors are used to adjust said lamp position to maintain optimum real-time light distribution in said projection system.

22. The apparatus of Claim 20, wherein said lamp power supply is adjusted to maintain a uniform brightness level during warm-up of said projection system.

23. The apparatus of Claim 20, wherein said maintenance notification alerts personnel to service said projection system and replace said lamp if necessary.

24. A retrofit automated lamp focus and brightness control assembly for spatial light modulator based projection systems, comprising:

a partial turning mirror to replace an existing turning mirror in said projection system's

optical path, said partial turning mirror allowing a small fraction of the system's projected light to pass through it;

a focusing lens receiving said fraction of light from said partial turning mirror, said light passing through said focusing lens and reflecting off a secondary turning mirror on to the surface of a light detector, wherein the output of said light detector is used to control the brightness and light distribution of said light source.

25. The apparatus of Claim 24, further comprising:

a micro-controller coupled to the output of said light detector;

first, second, and third outputs from said lamp focus mechanism driving respective x, y, and z servomotors for precisely positioning said lamp;

a fourth output from said lamp brightness control circuitry driving a lamp power supply for adjusting said lamp's brightness; and

a fifth output of said micro-controller providing a maintenance notification signal.

26. The apparatus of Claim 25, wherein said servomotors are used to adjust said lamp position to maintain

optimum real-time light distribution in said projection system.

27. The apparatus of Claim 25, wherein a lamp power supply is adjusted to maintain a uniform brightness level during warm-up of said projection system.

28. The apparatus of Claim 25, wherein said maintenance notification alerts personnel to service said projection system and replace said lamp if necessary.

29. A spatial light modulator based electronic projection system with automated lamp focus control, comprising:

a light source consisting of a reflector and lamp, emitting light along a first light path;

a first optional turning mirror to direct light from said light source to focus at the input of a light integrator;

a first relay lens and a second optional turning mirror for directing light from the output of said integrator to a second series of relay lenses and on to the surface of a partial turning mirror;

primary light reflected from said partial turning mirror directed along a second light path through a third relay lens and through a

total internal reflective prism on to the surface of red-green-blue color splitting prisms, respectively;

three spatial light modulators positioned to receive red-green-blue light, respectively, from said color prisms;

modulated light reflected from said spatial light modulators directed through recombining optics and projected by means of a projection lens, on to a display screen; and

an array of light sensors located on the surface of said display screen for measuring total brightness and light distribution of the projected image.

30. The apparatus of Claim 29, wherein said array of sensors are embedded in selected perforations in the surface of said display screen.

31. The apparatus of Claim 30, further comprising:

a micro-controller coupled to the output of said light detector;

first, second, and third outputs from said lamp focus mechanism driving respective x, y, and z servomotors for precisely positioning said lamp;

a fourth output from said lamp brightness control circuitry driving a lamp power supply for adjusting said lamp's brightness; and

a fifth output of said micro-controller providing a maintenance notification signal.

32. The apparatus of Claim 31, wherein said servomotors are used to adjust said lamp position to maintain optimum real-time light distribution in said projection system.

33. The apparatus of Claim 31, wherein said lamp power supply is adjusted to maintain a uniform brightness level during warm-up of said projection system.

34. The apparatus of Claim 31, wherein said maintenance notification alerts personnel to service said projection system and replace said lamp if necessary.

35. An automated focus and brightness control system comprising:

a lamp providing white light along a first light path;

servos positioning said lamp;

a partial mirror on said first path, said partial mirror separating said white light into a primary beam and a secondary beam;

a display engine for producing an image using said primary beam and projecting said image to an image plane;

a detector receiving said secondary beam, said detector providing a signal indicative of a brightness and focus of said lamp;

a controller receiving said signal and controlling said servos to focus said lamp.

36. An automated focus and brightness control system comprising:

a lamp providing white light along a first light path;

servos positioning said lamp;

a display engine for producing an image using said white light and projecting said image to a screen;

a detector embedded in portions of said screen for measuring a brightness and uniformity of said image, said detector providing a signal indicative of a brightness and uniformity of said lamp;

a controller receiving said signal and controlling said servos to focus said lamp.